

REMARKS

The Office Action of March 3, 2007 has been received and carefully reviewed. It is submitted that, by this Amendment, all bases of rejection are traversed and overcome. Upon entry of this Amendment, claims 1 through 9 and 11 remain in the application. Claims 10 and 12-21 have been cancelled. Claims 1, 4, 5, and 6 have been amended. Basis for the amendments can be found throughout the specification as filed, at least at cancelled claim 10; page 3, line 26 to page 4, line 6; page 7, lines 8 through 13; and page 9, line 19 to page 10, line 15. Reconsideration of the claims is respectfully requested.

Claims 1 and 4 through 6 stand rejected under 35 U.S.C. § 112, second paragraph, the Examiner alleging that the above claims are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 has been amended to recite that the polymerization is between monomers of the monoacrylate. Furthermore, claims 1, 4, 5 and 6 have been amended to describe the relationship of the polar binder and some of the other various components of the composition, in some embodiments some of the various components being included in the polar binder. Basis for the amendments can be found in the specification as described above.

The amendments to the claims directly respond to the Examiner's concerns in the § 112 rejection. Applicants respectfully assert that such rejection should be withdrawn.

Claims 1-3, 8, 10 and 11 stand rejected under 35 U.S.C. § 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Napadensky (U.S. Patent No. 6, 659,373). Furthermore, Claims 1-11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DE 101 58 233 A1 in view of Napadensky.

The Applicants' invention as defined in claim 1 relates to a composition including: a basic component selected from beryllium oxide, zinc oxide, copper oxide, magnesium oxide, calcium oxide, strontium oxide, barium oxide, and salts thereof; reactive glasses; and combinations thereof; an acidic component; at least one monoacrylate component; a light sensitive initiator; a polar binder; a viscosity modifier; and a surface tension modifier. The basic component is in the form of a powder, and is cation releasing and proton accepting in the

presence of the acidic component. The acidic component and the at least one monoacrylate component are different compounds. The polar binder includes the viscosity modifier and the surface tension modifier. The light sensitive initiator initiates a polymerization reaction between monomers of the at least one monoacrylate component by free radicals formed when the light sensitive initiator is exposed to optical energy while being present with the monoacrylate component. The polar binder is capable of stimulating a crosslinking reaction between the basic component and the acidic component.

In contrast, Napadensky discloses a method for preparing a three dimensional object. Specifically, a photoinitiator initiates a polymerization reaction between first and second liquid interface materials. The first liquid interface material is a combination of reactive materials, primarily an acrylic component among other polymerizable materials. The second liquid interface material has non-reactive and reactive components. No acid-base reactions occur between the two interface materials. Furthermore, the polymerization reaction is initiated by the photoinitiator alone. In the present rejection, the Examiner refers to the pigment dispersant "Disperbyk 110" in Napadensky as corresponding to an "acidic component" and the titanium dioxide pigment in Napadensky as corresponding to a metal oxide "basic component."

While titanium dioxide pigment can be termed a metal oxide in the broadest sense, it does not release cations that mediate crosslinking and solidification like the metal oxides and other basic components recited in Applicants' claims. Disperbyk 110 is a pigment dispersant with acidic groups. It is capable of dispersing pigments in an aqueous solution by an exchange of ions. Thus, it allows otherwise insoluble pigments to be dispersible in aqueous solution. However, the combination of the Disperbyk 110 dispersant and the titanium dioxide pigment does not contribute in any way to crosslinking and/or solidification of the first and second interface materials of Napadensky. Instead, this is accomplished by the photoinitiator.

In contrast, the basic components of the Applicants' invention as defined in the pending claims are actively involved in the crosslinking and solidification process. Applicants' basic component is selected from beryllium oxide, zinc oxide, copper oxide, magnesium oxide, calcium oxide, strontium oxide, barium oxide, and salts thereof; reactive glasses; and combinations thereof. Furthermore, the basic component is in the form of a powder, and is cation releasing in the presence of the acidic component of the composition. Titanium dioxide

would not be able to function as the Applicants' basic component. Titanium dioxide is a pigment used in paint and ink. It is well known to be quite insoluble in either an aqueous or non-aqueous solvent. The presence of a special dispersant like Disperbyk 110 renders it somewhat dispersible, but generally does not render it soluble and capable of giving off cations in an aqueous solution to make it reactive with an acidic component. In other words, titanium dioxide is quite different than the metal oxides or other basic components of the Applicants' claims, all of which are readily reactive with an acidic component. Specifically, Applicants' basic components are all able to release cations and accept protons when in the presence of an acidic component. Titanium dioxide would not at all fit this description. The interaction of titanium dioxide with the specially prepared dispersant, Disperbyk 110 dispersant, to render the titanium dioxide dispersible in an aqueous solution in no way suggests a crosslinking or solidification-promoting function for titanium dioxide. For all the above reasons, among others, Napadensky neither anticipates nor suggests the Applicants' invention as defined in the pending claims.

Furthermore, it is submitted that Napadensky in combination with DE 101 58 233 A1 does not teach or suggest the Applicants' invention as defined in the pending claims. In fact, one skilled in the art would not be motivated to combine Napadensky with DE '233. Unlike Napadensky, DE '233 teaches 3-D printing with the combination of a polyacidic and a polybasic component in a redox polymerization reaction to achieve the 3D-printed composition. DE '233 does not teach or suggest using a photoinitiator.

Furthermore, DE '233 utilizes polybasic components of nitrogen-containing organic bases, which are far different than metal oxides, salts and reactive glasses used as the Applicants' basic component. Such organic bases function as Lewis Bases rather than the ionizing bases utilized in acid-base reactions. During a reaction with the polyacidic components, the Lewis Bases of DE '233 do not release or accept ions, rather the components react by oxidizing or reducing, i.e. changing oxidation numbers, as is typical of redox reactions.

Therefore, in addition to not utilizing a photoinitiator, DE '233 does not utilize acid-base reactions in the crosslinking/solidification process. In summary, the DE '233 disclosure provides neither a missing element nor the suggestion of a missing element, or even a predictable outcome, which would, if combined together with Napadensky, teach or suggest to

one skilled in the art how to achieve the composition defined in Applicants' claims. The combination of Napadensky and DE '233 neither teaches nor suggests the instant disclosure.

For all the reasons stated above, it is submitted that Applicants' invention as defined in independent claim 1, and in those claims depending ultimately therefrom, is not anticipated, taught or rendered obvious by the cited references, either alone or in combination, and patentably defines over the art of record.

In summary, claims 1 through 9 and 11 remain in the application. It is submitted that, through this Amendment, Applicants' invention as set forth in these claims is now in a condition suitable for allowance.

Further and favorable consideration is requested. If the Examiner believes it would expedite prosecution of the above-identified application, the Examiner is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

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